

U.S. Patent Application Serial No. 09/980,329
Applicant: Winder, et al.
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AMENDMENTS TO THE CLAIMS

A single version of all claims that are, or were, in the application, are marked up to show all the changes relative to the previous version of the claims, is now set forth, with deleted text shown by ~~strike through~~ and added text shown by underlining:

1. (Currently Amended) A method for accelerating a healing process for an injury using ultrasound, the method comprising the steps of

introducing a capsule comprising a sensor and an ultrasound contrast agent into a patient, wherein the ultrasound contrast agent is adapted to accelerate a healing process for an injury upon application of ultrasound;

mounting an ultrasonic source to the patient;

transmitting a signal to the sensor instructing the capsule to release a portion of the ultrasound contrast agent; and

impinging ultrasonic waves in proximity to the injury, wherein the ultrasound contrast agent facilitates in lowering the cavitation threshold to an intensity level attainable by the ultrasonic waves.
2. (Previously Amended) The method according to Claim 1, further comprising the step of maintaining the acoustic spatial average-temporal average (SATA) intensity of the ultrasonic waves from about 5 to 500 mW/cm².
3. (Original) The method according to Claim 1, wherein the ultrasound contrast agent is comprised of microbubbles having a radius from 0.1 to 10.0 μ m.
4. (Original) The method according to Claim 3, further comprising the step of maintaining the resonance bubble frequency of the microbubbles from 0.5 MHz to 10 MHz.

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5. (Original) The method according to Claim 1, further comprising the step of maintaining the acoustic transmit frequency of the ultrasonic waves from 10 kHz to 10 MHz.

6. (Original) The method according to Claim 1, further comprising the step of terminating the impinging step after approximately thirty minutes.

7. (Original) The method according to Claim 1, wherein the step of introducing comprises the step of time-releasing the ultrasound contrast agent into the patient.

8. (Original) The method according to Claim 1, wherein the step of introducing comprises the step of using a syringe to intravenously introduce the ultrasound contrast agent into the patient.

9. (Original) The method according to Claim 1, wherein the step of introducing comprises the steps of:

placing the ultrasound contrast agent within a timed-release capsule; and

placing the timed-release capsule within the patient.

10. (Original) The method according to Claim 1, wherein the step of introducing comprises the steps of:

placing a capsule housing a sensor and the ultrasound contrast agent inside the patient;

and

transmitting a signal to the sensor instructing the capsule to release the ultrasound contrast agent.

11. (Currently Amended) A kit for accelerating a healing process for an injury upon application of ultrasound, the kit comprising:

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an ultrasonic transducer assembly having at least one ultrasonic transducer, wherein the ultrasonic transducer assembly is adapted to be mounted to a patient's body;

an ultrasonic signal generator coupled to the ultrasonic transducer assembly;

a main operating unit electrically coupled to the ultrasonic signal generator for transmitting at least one signal thereto activating the at least one ultrasonic transducer; and

an ultrasound contrast agent adapted to accelerate a healing process for an injury upon application of ultrasound, and further adapted to be released from a capsule comprising a sensor capable of receiving a signal instructing the capsule to release a portion of the ultrasound contrast agent.

12. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is housed within a syringe.

13. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is housed within a timed-release capsule.

14. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is housed within a delivery/release system having means for responding to the ultrasonic waves.

15. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is comprised of microbubbles having radii from 0.1 to 10.0 μm .

16. (Original) The kit according to Claim 11, further comprising a placement module configured to be worn by a patient, the placement module being configured to receive the transducer assembly such that when the placement module is worn the at least one ultrasonic transducer is positioned in proximity to the injury.

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17. (Previously Amended) The kit according to claim 11, wherein the ultrasonic signal generator includes signal generator circuitry and an internal power source connected to the signal generator circuitry.

18. (Original) The kit according to Claim 11, wherein the main operating unit is positioned within a pouch worn by the patient to permit portable operation thereof.

19. (Original) The kit according to Claim 11, further comprising a gel-like substance for acoustically coupling the ultrasonic waves, emitted by the at least one ultrasonic transducer, to the body of the patient.

20. (Currently Amended) A method for accelerating a healing process for an injury upon application of ultrasound, the method comprising the steps of:

providing a main operating unit having an internal power source coupled to an ultrasonic transducer assembly, the ultrasonic transducer assembly includes at least one ultrasonic transducer, an ultrasonic signal generator and signal generator circuitry therein, wherein the ultrasonic transducer assembly is adapted to be mounted to a patient's body;

providing a placement module configured for receiving the ultrasonic transducer assembly and for placing the at least one ultrasonic transducer in proximity to the injury;

introducing a capsule comprising a sensor and an ultrasound contrast agent into the patient, wherein the ultrasound contrast agent is adapted to accelerate a healing process for an injury upon application of ultrasound, and the sensor is capable of receiving a signal to release at least some of the ultrasound contrast agent inside the patient;

transmitting a signal to the sensor instructing the capsule to release a portion of the ultrasound contrast agent; and

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exciting the at least one ultrasonic transducer to impinge ultrasonic waves at or near the injury, wherein the ultrasound contrast agent facilitates in lowering the cavitation threshold to an intensity level attainable by the ultrasonic waves.

21. (Original) The method according to Claim 3, wherein the radii of the microbubbles of the ultrasound contrast agent are less than 7.0 μm .

22. (Original) The method according to Claim 10, wherein the step of transmitting a signal to the sensor comprises instructing the capsule to release the ultrasound contrast agent in preset amounts at multiple predetermined time intervals.

23. (Previously Amended) The kit according to Claim 15, wherein the radii of the microbubbles of the ultrasound contrast agent are less than 7.0 μm .

24. (Previously Amended) The kit according to Claim 17, wherein the signal generator circuitry comprises a processor and means for generating a pulsed RF signal.